

Table S4. Contents of major (wt.%) elements in the magmatic rocks of the Tommot massif

sample	rock	SiO ₂	TiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MnO	MgO	CaO	Na ₂ O	K ₂ O	P ₂ O ₅	CO ₂	H ₂ O ⁻	H ₂ O ⁺	F	Cl	Li ₂ O	Rb ₂ O	S	Total	f, %	ToC	P, kb	
I phase																									
V23/1	jacupirangite	31.60	4.36	13.33	13.34	8.71	0.34	11.07	16.69	0.58	0.28	0.13	-	0.14	0.98	0.02	-	-	-	-	101.43	0.66	1250	10	
V23/1a	jacupirangite	34.52	4.41	15.10	10.62	9.20	0.14	10.08	15.04	0.55	0.42	0.14	-	-	0.44	0.06	0.04	-	-	-	100.76	0.65	1200		
2058/1	jacupirangite	35.50	6.34	12.83	8.4	9.62	0.15	11.31	11.49	1.47	0.76	0.13	0.20	-	-	-	-	-	-	0.25	99.60	0.60	1300		
V8/4	jacupirangite	35.94	5.37	15.26	5.30	11.42	0.14	9.43	12.36	1.98	0.77	0.22	1.01	0.04	1.15	0.10	0.11	-	-	0.37	100.93	0.63	1300	20	
V6/7	jacupirangite	36.08	5.15	11.52	4.74	13.14	0.19	9.95	13.65	1.82	0.74	0.50	1.46	0.15	1.00	0.11	0.10	-	-	-	100.15	0.64	1150	20	
V102/4	jacupirangite	36.61	3.45	20.94	8.18	5.00	0.10	6.74	15.52	1.61	0.39	0.09	0.39	0.04	1.53	0.08	0.04	0.002	0.003	-	100.37	0.65	1250		
V9/3a	feldspar jacupirangite	36.73	4.89	12.27	5.63	13.90	0.30	10.02	10.42	2.20	0.90	0.28	1.04	0.19	0.83	0.13	0.11	-	-	0.17	99.82	0.65	1400	20	
14/2	jacupirangite	36.98	3.86	20.70	7.55	6.16	0.12	6.48	12.89	1.92	1.19	0.05	-	-	1.94	0.08	-	0.004	0.001	-	99.93	0.62	1200		
V15/4	feldspar jacupirangite	37.77	5.03	17.34	5.73	7.97	0.15	6.20	14.30	2.37	0.62	1.79	0.36	0.06	0.89	0.18	-	-	-	-	100.35	0.68	1300	10	
V8/3	ijolite	37.81	3.72	18.22	5.16	8.53	0.18	5.55	14.07	2.45	0.94	1.32	1.04	0.16	0.99	0.12	-	-	-	-	100.19	0.70	1300		
O14/7	feldspar jacupirangite	38.17	3.24	20.09	4.81	6.31	0.12	5.84	14.67	1.87	1.65	1.38	1.30	-	1.42	0.14	--	-	-	-	101.01	0.66	1200		
Ft3/1	feldspar jacupirangite	38.50	3.80	16.63	6.04	9.60	0.22	5.41	11.34	3.01	1.46	1.97	1.42	0.12	1.29	0.18	-	-	-	-	100.99	0.74	1350		
2306/7	feldspar jacupirangite	38.65	4.57	16.32	3.03	10.97	0.38	5.97	9.59	2.54	2.40	2.42	1.76	-	2.12	0.28	-	-	-	-	101.02	0.70	1350		
O108/8	feldspar jacupirangite	38.91	3.34	19.18	7.02	8.03	0.21	4.66	10.31	2.70	2.54	1.42	-	0.11	1.95	0.15	0.02	0.005	0.001	-	100.56	0.75	1300		
V24/7	feldspar jacupirangite	39.46	4.08	20.68	5.92	4.63	0.63	4.75	14.62	2.05	0.50	0.04	2.03	0.14	1.77	0.04	-	-	-	-	101.34	0.68	1400		
V17/1	peridotite	40.30	2.81	10.31	3.99	7.77	0.15	13.65	16.30	1.34	0.53	0.16	1.64	0.14	1.63	0.08	-	-	-	-	101.09	0.45			
0V3/13	feldspar jacupirangite	40.93	3.53	15.06	6.84	7.95	0.22	6.51	12.61	2.43	1.60	0.39	0.82	0.06	1.35	0.07-	-	-	-	-	100.53	0.68	1400	30	
V103/1	feldspar jacupirangite	41.28	3.56	18.08	6.52	6.72	0.21	5.13	11.67	3.61	0.99	1.13	-	0.06	1.36	0.15	-	0.001	0.001	0.62	100.28	0.71	1350		
2306/10	feldspar jacupirangite	41.01	3.74	9.71	4.18	12.35	0.27	7.86	12.06	2.48	1.60	0.21	1.99	-	1.97	0.11	-	-	-	-	99.54	0.57			
V26/5	feldspar jacupirangite	41.30	3.33	20.70	4.78	4.20	0.09	3.75	14.19	2.61	1.05	1.18	2.40	0.24	1.27	0.11	-	-	-	-	100.99	0.69			
V26/3	feldspar jacupirangite	41.62	.46	28.02	3.30	2.53	0.05	1.71	13.51	2.02	1.86	0.03	-	0.06	2.86	0.02	0.14	0.009	0.004	0.11	99.25	0.76			
V12/10	feldspar jacupirangite	41.87	3.74	16.81	2.90	10.43	0.25	4.42	10.54	3.17	1.76	1.49	-	0.08	1.17	0.27	0.21	0.003	0.004	0.05	99.17	0.75	1300		
V21/4	feldspar jacupirangite	42.32	2.74	18.22	8.63	7.64	0.42	3.23	9.15	3.51	1.62	0.62	1.08	0.10	1.86	0.06	-	-	-	-	101.20	0.83		15	
V9/4	gabbro	45.15	1.35	9.54	4.35	8.14	0.16	17.65	8.66	1.87	0.57	0.20	0.94	0.12	0.80	0.04	-	-	-	-	100.40	0.41	1200	35	
II phase																									
O10/3	theralite	43.08	3.49	17.71	3.91	7.17	0.37	4.95	10.22	3.87	1.91	1.39	1.02	0.04	0.84	0.25	-	-	-	-	100.18	0.68	1200		
O14/6	gabbro	44.94	2.26	14.51	4.53	8.58	0.17	8.94	10.98	2.72	0.83	0.33	0.46	0.04	1.00	0.07	-	-	-	-	100.37	0.59	1400	30	
V4/1	theralite	45.41	2.83	17.03	0.80	12.24	0.32	3.75	8.78	4.45	0.87	1.05	-	0.17	2.61	0.15	0.09	-	-	-	100.38	0.78	1200	14	
V88/1	theralite	45.56	2.44	18.03	5.03	7.03	0.24	4.01	8.57	4.76	1.48	0.92	0.35	0.15	1.76	0.06	-	0.002	0.002	-	100.9	0.80	1100	35	
V9/8	theralite	45.73	2.58	20.34	1.96	6.90	0.12	4.48	10.23	4.14	0.84	0.39	0.77	0.19	1.25	0.08	0.15	-	-	-	100.11	0.66	1200	28	
1083	theralite	46.80	2.52	16.40	3.43	7.77	0.20	7.42	8.03	3.90	1.94	0.77	0.20	0.04	1.33	0.07	-	0.016	0.022	-	100.86	0.59	1200	28	
V6/3	theralite	47.74	1.93	23.40	1.54	6.15	0.09	1.63	11.03	4.50	0.74	0.84	-	0.08	0.46	0.08	0.07	-	-	-	100.20	0.80	950	16	
O12	theralite	49.26	2.19	19.99	3.31	5.79	0.10	2.49	7.02	5.78	1.21	0.59	1.06	-	1.70	0.11	-	-	-	-	100.61	0.78	1200	25	

Table S4. Contents of major (wt.%) elements in the magmatic rocks of the Tommot massif (continuation)

sample	rock	SiO ₂	TiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MnO	MgO	CaO	Na ₂ O	K ₂ O	P ₂ O ₅	CO ₂	H ₂ O ⁻	H ₂ O ⁺	F	Cl	Li ₂ O	Rb ₂ O	S	Total	f,%	ToC	P, kb	
V3/2	essexite	49.60	1.69	15.70	3.90	9.55	0.32	2.56	6.14	4.11	3.94	0.90	-	0.03	1.05	0.22	0.20	0.003	0.007	0.04	99.93	0.84	1200	25	
V21/5	theralite	50.55	1.48	21.31	4.52	520	0.13	1.03	8.41	5.17	0.67	0.31	-	0.04	0.39	0.05	0.14	0.003	-	0.02	99.38	0.90	1000	15	
O19/3	theralite	51.17	1.33	19.08	3.50	6.74	0.27	1.49	4.66	6.08	1.67	0.31	2.62	0.12	2.35	0.09	-	-	-	-	101.48	0.88	1100	23	
O9/4	essexite	53.24	1.62	17.44	3.60	4.02	0.32	2.40	6.44	5.30	2.65	0.60	0.92	0.16	1.23	0.16	-	-	-	-	99.94	0.75	1150	18	
O19/1	theralite	54.09	0.86	19.85	1.17	5.60	0.12	0.97	4.08	6.37	1.82	0.14	0.82	0.06	2.10	0.07	0.19	0.004	0.006	0.03	98.35	0.87	1000	23	
O11/4	essexite	54.89	0.11	25.01	0.55	0.87	0.04	0.22	6.14	5.94	3.04	0.04	-	0.02	1.50	0.01	-	0.002	0.008	0.10	98.40	0.56	950	18	
III phase																									
O16/13	foid-bearing monzonite	54.81	0.49	22.29	3.11	0.37	0.15	0.10	0.11	9.02	5.97	0.09	1.28	0.24	0.05	0.02	-	-	-	-	98.26	0.97	750	20	
VT87/1	foid-bearing monzonite	56.92	1.17	19.22	2.50	4.13	0.06	1.15	3.10	7.14	2.99	0.36	-	0.05	1.02	0.06	-	0.002	0.003	-	99.30	0.85	1150	18	
T13	foid-bearing monzonite	57.53	0.75	20.26	2.78	1.23	0.10	0.27	6.75	6.77	2.32	0.13	0.60	-	0.52	0.06	-	-	-	-	100.03	0.93	1100	16	
FT3/3	alkali-feldspar syenite	57.67	0.90	19.19	3.22	3.45	0.07	0.69	3.00	6.24	3.82	0.23	0.66	-	0.39	0.05	-	-	-	-	99.64	0.90	900	16	
V13/2	alkali-feldspar syenite	58.07	0.93	19.72	1.10	3.03	0.12	1.36	3.93	6.05	3.46	0.18	-	0.10	0.81	0.09	0.16	0.001	0.006	0.02	98.99	0.75	900	16	
V5/5	monzonite	58.33	2.65	15.77	3.87	4.46	0.06	1.74	3.37	3.79	5.11	0.58	-	0.10	0.72	0.22	0.02	0.002	0.005	-	100.76	0.82		15	
2306/20	foid-bearing syenite	59.74	0.48	18.71	0.77	3.42	0.17	0.46	1.96	5.70	5.96	0.05	0.27	0.06	1.18	0.03	0.12	0.003	0.009	0.01	98.95	0.90			
O6/2	alkali-feldspar syenite	60.41	0.30	17.93	1.38	3.33	0.17	0.12	1.99	5.94	5.62	0.12	-	0.16	0.28	0.05	0.02	0.001	0.008	0.02	97.57	0.97	700	16	
O6/1	alkali-feldspar syenite	60.49	0.21	18.30	1.78	3.20	0.19	0.09	1.90	6.20	5.16	0.05	0.45	-	0.61	0.01	0.01	0.003	0.012	0.02	98.86	0.98	650	16	
2310/1	alkali-feldspar syenite	60.62	0.40	17.05	3.12	3.14	0.08	0.03	1.99	5.80	6.31	0.11	-	0.02	0.02	0.01	0.11	0.001	0.008	-	98.93	0.99	700	17	
V3/5	alkali-feldspar syenite	60.66	0.26	17.27	2.05	1.97	0.10	0.08	2.67	6.24	5.15	0.08	0.82	0.07	0.90	0.05	0.18	0.001	0.007	-	98.54	0.98	650	16	
V9/6	alkali-feldspar syenite	60.80	0.34	19.09	1.54	3.17	0.13	0.48	0.65	6.25	5.84	0.12	0.76	0.14	0.77	0.04	-	-	-	-	100.01	0.90	650	16	
V12/8	alkali-feldspar syenite	61.44	0.47	17.42	2.49	2.76	0.04	0.17	1.72	6.01	5.8	0.14	-	0.09	0.75	0.09	0.17	0.001	0.008	0.01	99.60	0.97	700	16	
O16/4	alkali-feldspar syenite	61.94	0.64	17.51	3.02	1.44	0.02	0.05	1.47	5.24	6.89	0.14	0.55	0.04	1.04	0.09	0.05	0.002	0.006	-	100.13	0.99		16	
V4/4	foid-bearing syenite	62.34	0.25	20.51	1.34	0.27		0.09	2.12	6.20	6.90	0.04	-	0.06	0.11	-	0.07	-	-	-	100.26	0.94		17	

Notes: The analyzes were performed at IGABM SB RAS – analysts of D. A. Kulagina, G. N. Okhlopkova, S. E. Diakonova. Melt temperature by [47, 48], pressure – by [49].